

UCLA Technology Development Group

UCLA Innovation Fund

MedTech Track

Portfolio Update Newsletter

June 2020

UCLA Innovation Fund #1711:

Polymer for Antimicrobial Coating on Orthopedic Implants

ACHIEVEMENTS-TO-DATE

- Identified regulatory path for filing combined product – kitting with an existing product avoids drug pathway
- *In vitro* testing on multiple surfaces

SEEKING PARTNERSHIP

- Need Marketing partner for first indication and for 510K
- Regulatory partner needed for Humanitarian device exemption filing

Problem

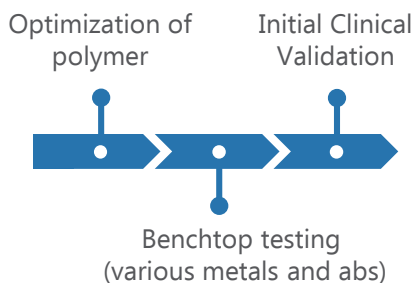
- Implants carry up to 20% risk of infection and represent the **#1 cause of surgical failure**
- Due to biofilm formation, implant infection is especially difficult to treat

Solution

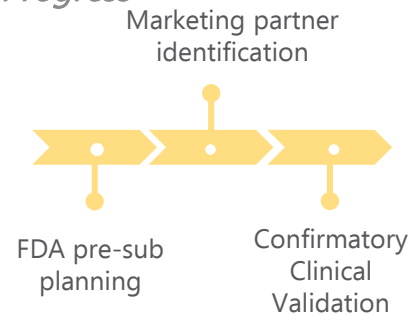
- Novel polymer which can be mixed with antibiotic of choice
- “Varnish” can then be applied onto implants intraoperatively to prevent infection



Completed



In Progress



UCLA Innovation Fund #1811: Next Gen Optical Coherence Tomography (OCT)

ACHIEVEMENTS-TO-DATE

- Integrated lab-built light source into research systems
- Demonstrated image acquisition with light source

SEEKING PARTNERSHIP

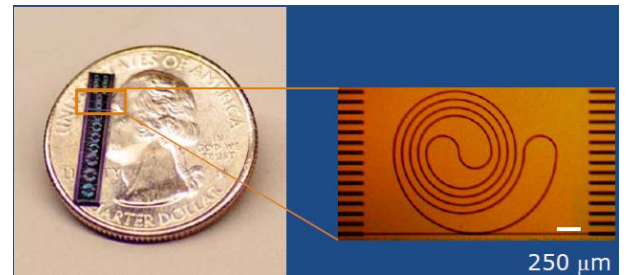
- Validation model form factor
- Clinical validation required

Problem

- Optical Coherence Tomography (OCT) is the standard imaging tool for diagnosis and monitoring of many ophthalmic pathologies
- OCT has a **long acquisition time** (2-3 secs) which results in artifacts due to eye movement

Solution

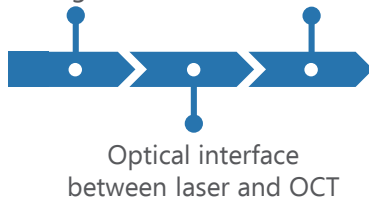
- Novel OCT modality based on chip-scale laser frequency combs
- Results in **100x faster** acquisition speed and **40x improvement** in axial resolution



Completed

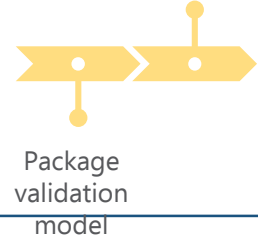
On-chip module with photonic and electronic circuit integration

Software development and optimization



In Progress

Clinical validation



UCLA Innovation Fund #1813:

Blood-based biomarker to diagnose irritable bowel syndrome (IBS)

ACHIEVEMENTS-TO-DATE

- Community hospitals recruited for ongoing patient acquisition
- 60% of required samples acquired
- Currently on hold for COVID

SEEKING PARTNERSHIP

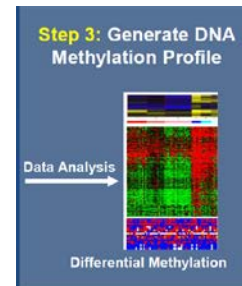
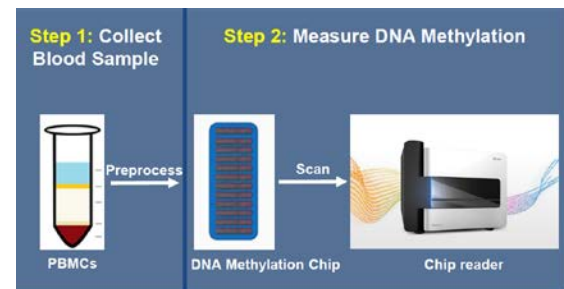
- Partners with access to high volume of blood samples
- Commercialization partner preferably with paired therapeutic
- Reimbursement partner

Problem

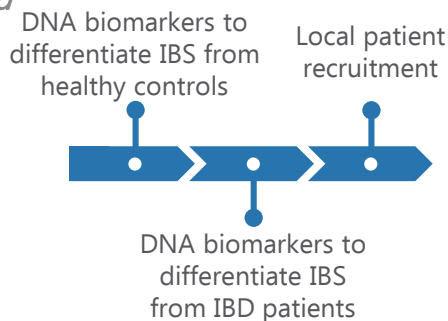
- Irritable Bowel Syndrome is a common disease with a prevalence of 11%
- Viewed as a **diagnosis of exclusion** with symptom-based diagnosis
- "Rule out" tests to exclude other diseases are **expensive and time consuming**

Solution

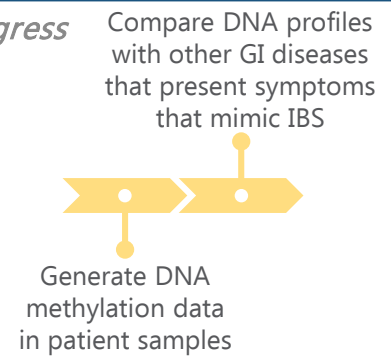
- **Blood-based diagnostic** test using DNA methylation markers
- Ability to **distinguish IBS from healthy controls** as well as from more serious diseases such as inflammatory bowel disease (IBD)



Completed



In Progress



Lin Chang, MD

Professor and Vice-chief,
Medicine

Swapna Joshi, PhD

Adjunct Assistant Professor,
Medicine

UCLA Innovation Fund #1815:

Novel Nanostructured Osteoconductive Periodontal Membrane

ACHIEVEMENTS-TO-DATE

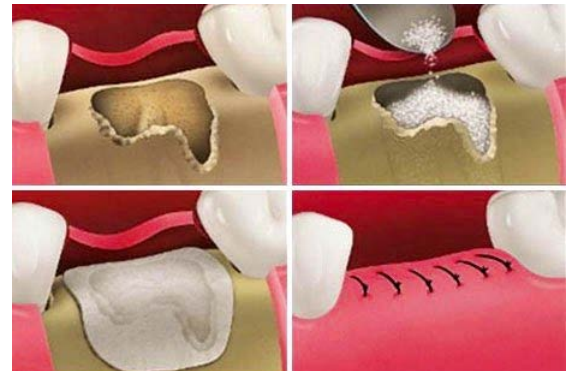
- Market exploration begun, but all lab work on pause until return to lab

SEEKING PARTNERSHIP

- Commercial partners for initial application
- Regulatory partners

Problem

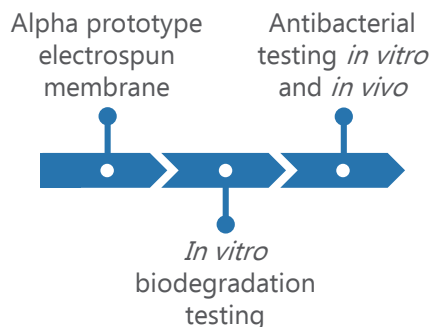
- Periodontitis affects nearly **50%** of the adult U.S population with severe forms leading to tooth loss
- Current guided tissue regeneration (GTR) membranes lack suitable mechanical properties



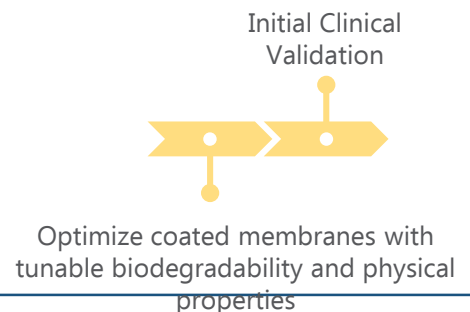
Solution

- Current **disadvantages** of surgical manipulation of bones and soft tissues result in the need for **improved systems and methods**
 - Manual force limits both the **magnitude, duration and precision** of manipulation
 - Manual manipulation exposes the surgeon and surgical assistants to **increased radiation**

Completed



In Progress



UCLA Innovation Fund #1911: Articulated Rigid Traction System

ACHIEVEMENTS-TO-DATE

- Contracted with design-manufacturer for first validation model
- Completed gap analysis
- Started regulatory filing

SEEKING PARTNERSHIP

- Clinical partners for first-in-man studies
- Commercial partners for sales channel

Problem

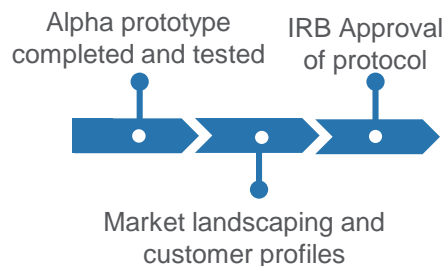
- Current **disadvantages** of surgical manipulation of bones and soft tissues result in the need for **improved systems and methods**
 - Manual force limits both the **magnitude, duration and precision** of manipulation
 - Manual manipulation exposes the surgeon and surgical assistants to **increased radiation**

Solution

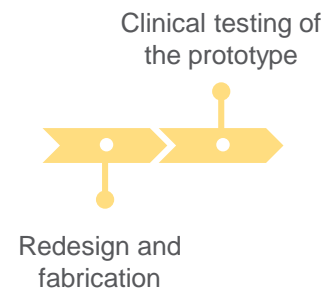
- Novel **Articulated Rigid Traction System** for **orthopaedic fracture management**
 - **Simple to operate**
 - **Precise** positioning unstable bone fragments during surgery



Completed



In Progress



UCLA Innovation Fund #1912:

A Wearable Platform Detecting Cortisol Levels for Stress Management

ACHIEVEMENTS-TO-DATE

- Started circuit surface engineering prior to shutdown
- Ongoing market exploration work

SEEKING PARTNERSHIP

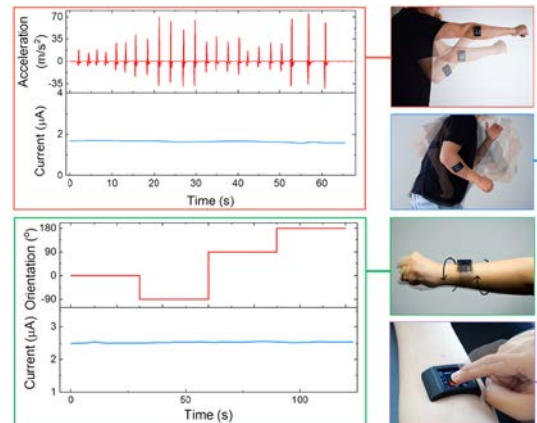
- Partners with consumer or research applications for sensor

Problem

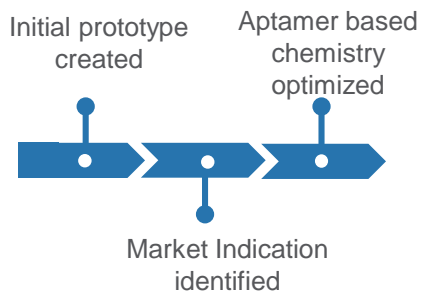
- Current technologies **lack capability to obtain and analyze molecular-level information**, which is critical to assessing human health

Solution

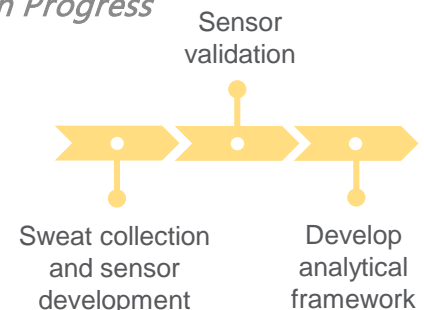
- **Aptamer-based sensor interface** that can sample sweat to **detect cortisol levels** non-invasively
 - Allows monitoring of stress mgmt in real-time
 - Tech can be integrated to current "solutions"



Completed



In Progress



UCLA Innovation Fund #1913:

Point-of-care Detection Device for Cerebrospinal Fluid Leaks

ACHIEVEMENTS-TO-DATE

- Sensitivity and specificity validated in small patient sample, currently expanding to larger patient sample

SEEKING PARTNERSHIP

- Antibody supply at scale
- Commercialization and manufacture partner

Problem

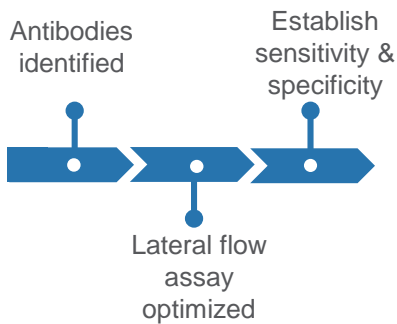
- Currently available tests **for beta-2 transferrin takes too long** and cannot guide decision-making in clinical work-up

Solution

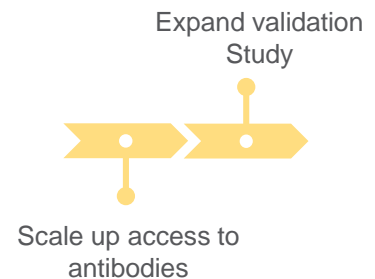
- A **rapid** (~20 min), **point-of-care device** to discern **cerebrospinal fluid (CSF) leakage**



Completed



In Progress



Daniel T. Kamei, PhD
Professor,
Bioengineering

Maie A. St. John, MD, PhD
Associate Professor in Res,
Dept. Head & Neck Surgery

Ashley Elizabeth Kita, MD
Resident physician,
Dept. Head & Neck Surgery

UCLA Innovation Fund #1914:

Intraocular Robotic Interventional Surgical System for Cataract Removal

ACHIEVEMENTS-TO-DATE

- Steady improvement in performance of autonomous module
- Continued lab work temporarily on hold for crisis, will resume in July

SEEKING PARTNERSHIP

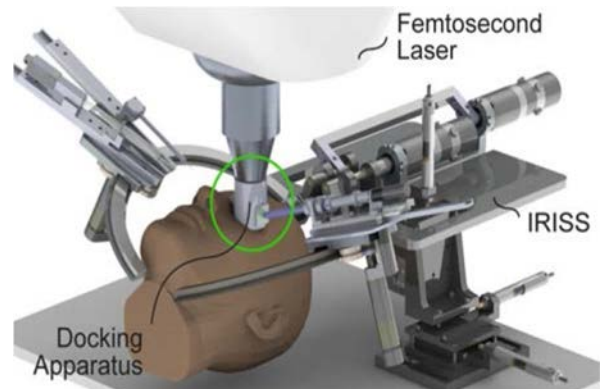
- Regulatory partnership
- Experienced VC funding

Problem

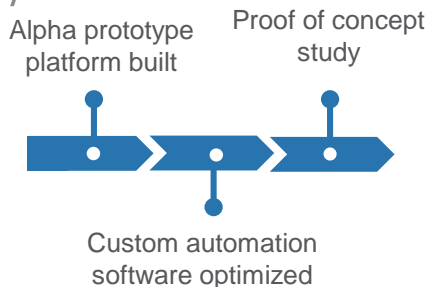
- **Incomplete lens removal** and other **surgical complications occur** frequently in the majority of **cataracts** patients due to lack of visualization and anatomical constraints
 - **Aim:** to develop **supporting technology** to improve cataract surgical outcomes

Solution

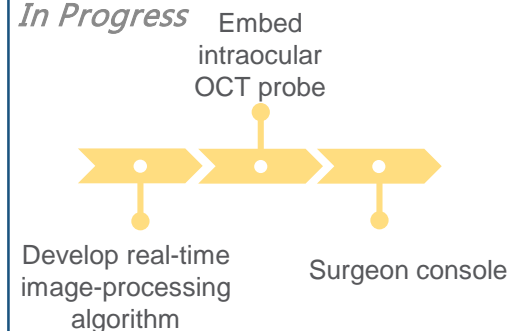
- A 4-part system for equator and posterior capsule (PC) polishing to additional surgical complications
 - Eye-stabilization device
 - Intraocular OCT probe
 - Real-time image segmentation algorithm
 - Touch-probe sensor



Completed



In Progress



UCLA Innovation Fund #1915:

A Novel Dental Remineralization Filling for Dental Caries

ACHIEVEMENTS-TO-DATE

- Progress made on material parameters
- Started market exploration

SEEKING PARTNERSHIP

- Regulatory partnership
- Commercial partner for sales channel testing

Problem

- The **current SOC for dental caries ineffectively addresses secondary or recurrent caries**

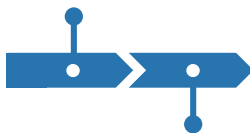
Solution

- A novel dental restorative (filling) material which
 - Stimulates natural mineral hydroxyapatite formation that **remineralizes demineralized enamel or dentin**
 - Bonds directly to tooth structure, prevents microleakage
 - Tooth colored, prevents secondary caries



Completed

Demonstrated mechanical strength, bond strength and sharp setting time



Demonstrated *in-vitro* hydroxyapatite remineralization

In Progress

Further develop production of PDA filler Clinical validation



Biocompatibility testing

UCLA Technology Development Group

Thank You

Matthew Savary, MD

Principal, UCLA Innovation Fund & New Ventures

UCLA Technology Development Group

10889 WILSHIRE BLVD., SUITE 920

LOS ANGELES, CA 90095

310.794.6698 | Matthew.Savary@tdg.ucla.edu

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